HSS Independent Activity Report - Rev. 0	Report Number: HIAR-PNNL-2014-01-10

| Site: Pacific Northwest National Laboratory | Subject: Office of Enforcement and Oversight's Office of Safety and Emergency Management Evaluations Activity Report for the Pacific Northwest National Laboratory (PNNL) Corrective Actions from the Independent Oversight Review of the Office of Science Assessment of the PNNL Radiochemical Processing Laboratory Criticality Alarm System (report dated October 2012) | |

Dates of Activity:	January 10, 2014	Report Preparer:	Jimmy Coaxum/Ivon Fergus

Activity Description/Purpose:

The Office of Enforcement and Oversight (Independent Oversight) reviewed:

1. Corrective actions implemented to address the Office of Health, Safety and Security (HSS) finding (**FIND-L2-1.** USQD RPL-2012-095D, FMP/JPP S68 118: *Add Criticality Alarm System Remote Reset*) is not clear whether the power supply reset relay is inside or outside the safety system boundary and, therefore, does not support the conclusion on whether a new failure mode is introduced. (10 CFR 830.203, *Unreviewed safety question process*; 10 CFR 830.122, *Quality assurance criteria*).

2. PNNL's response to HSS's concern that adding a criticality alarm system (CAS) remote reset could introduce a potential failure mechanism in that the software controlling the reset function could enter an infinite loop and cause the CAS to continually reset, thereby rendering the system effectively inoperable.

3. PNNL's response to HSS's request for clarification on how this remote reset enhances criticality detection capability as stated in USQD-RPL-2012-095D.

Result:

1. USQD RPL-2012-095D was revised to USQD RPL-2012-095D Rev. 1 to address concerns expressed by HSS. USQD RPL-2012-095D Rev. 1 states that the new remote reset is not required for the CAS to perform its safety function and that the relays and Metasys components and software are outside the safety significant boundary of the CAS and are not safety significant components. Independent Oversight agrees that this revision closes HSS finding **FIND-L2-1.**

2. USQD RPL-2012-095D Rev. 1 addresses the HSS concern that the software controlling the reset function could enter an infinite loop by stating that if the remote relay fails, it is expected to fail in a closed position and, thus, will not interrupt the flow of power to the CAS. The modification of Metasys software to implement the new reset capability will be tested, and if the reset fails in a way that interrupts power to the CAS, the existing CAS power fail alarm will be activated. Normal biennial testing of the CAS also verifies that the CAS is not experiencing a continuous reset. Independent Oversight agrees that this statement addresses the HSS concern.

3. USQD RPL-2012-095D Rev. 1 addresses the HSS question on how this remote reset enhances critical alarm detection as stated in USQD RPL-2012-095D by removing the claim of enhancement from USQD RPL-2012-095D Rev. 1.

HSS also recognizes that PNNL has satisfactorily performed the following actions to improve its unreviewed safety question (USQ) process: completing the scheduled 2012 USQ process assessment, providing interim training for all USQ screeners and evaluators on the expectations for clarity and completeness of USQ documentation, evaluating the need to revise the USQ process procedure to capture supplemental guidance for clarity and completeness of USQ documentation, and updating training qualification documentation to formalize expectations for clarity and completeness of USQ documentation.

HSS Participants	References
1(lead). Jimmy Coaxum	*Independent Oversight Review of the Department of Energy Office of Science Assessment of the Pacific Northwest National Laboratory Radiochemical Processing Laboratory Criticality Alarm System* (October 2012)

2. Ivon Fergus, subject matter expert	RPL-2012-095D, Rev.1 (FMP/JPP S681118: ADD Criticality Alarm Remote Reset)
	NMOD-NSFA-13-018, USQ Program Assessment
	Course Number: 1754, Rev 2, USQ Screener Training
	Course Number 1753 Rev 2, USQ Evaluator Training
	Briefing Document (Clarity and Completeness in Safety Evaluation USQs and USQD 325-CT-0000-BR-02)

Were there any items for HSS follow up? ☐Yes ☒No

HSS Follow Up Items

- None.